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The Lanston *
* Type-Machine

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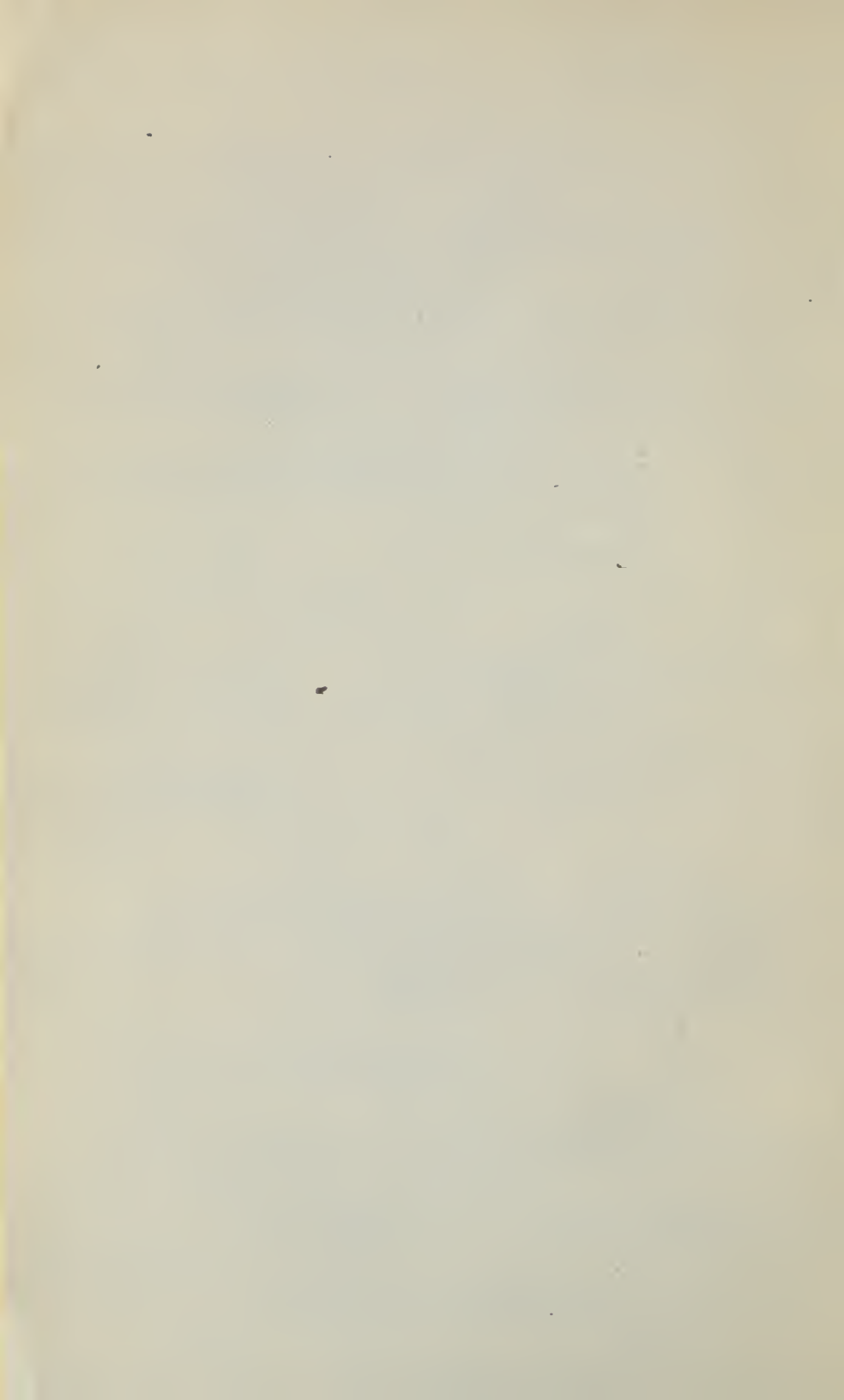
Expert and Legal Reports

ON

The Langston *

* Type-Machine





THE
LANSTON TYPE-MACHINE.

EXPERT REPORT

OF

COLEMAN SELLERS, E.D.,

CONSULTING ENGINEER; PROF. MECHANICS, FRANKLIN INSTITUTE; PROF. ENGINEERING
PRACTICE, STEVENS' INSTITUTE OF TECHNOLOGY, OF HOBOKEN; MEMBER OF INSTI-
TUTE OF CIVIL ENGINEERS, AND OF THE INSTITUTE OF MECHANICAL
ENGINEERS, GREAT BRITAIN; PAST PRESIDENT OF THE AMERICAN
SOCIETY OF MECHANICAL ENGINEERS AND OF THE
FRANKLIN INSTITUTE, ETC., ETC., ETC.,

AND

LEGAL REPORTS

OF

CHURCH & CHURCH

AND

W. W. GORDON.

NEW YORK:

1889.

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NEW YORK, September 20, 1889.

DR. HENRY MORTON,
President Stevens' Institute of Technology,
Hoboken, New Jersey :

MY DEAR SIR,—Referring to our conversation this day about the type-machine invented by Mr. Tolbert Lanston, of Washington, D. C., I beg to hand you herewith certain printed documents, relating thereto, recently issued by the Lanston Type-Machine Company.

Having followed the history and development of this invention for several years, I have recently been asked to place, with myself and my friends, a considerable block of the stock of the Lanston Type-Machine Company.

Before deciding to do this, I wish to have the drawings, the machine and its workings, and the proposed improvements thoroughly examined by some mechanical expert of established character and reputation. Will you not kindly read the afore-said documents, and, if you think the subject worthy of serious consideration, recommend to me some gentleman fully competent to make such examination, to the end that I may, if possible, secure his services?

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Very truly yours,
JNO. W. JOHNSTON.

STEVENS' INSTITUTE OF TECHNOLOGY,
HOBOKEN, N. J., September 21, 1889.

JNO. W. JOHNSTON, ESQ.:

DEAR SIR,—In answer to yours of the 20th instant I would say that the man pre-eminently fit to make such an examination as you indicate is Mr. Coleman Sellers, E.D., of Philadelphia.

Mr. Sellers has had forty years' constant experience in designing and constructing machinery of the best quality.

For over thirty-three years he was engineer of the great establishment of Wm. Sellers & Co., and there are few of the machine tools now in use in all our large machine-shops, which do not owe something of their present efficiency to the genius and experience of Mr. Coleman Sellers.

I should rely upon his judgment as to the practicability of a machine or of proposed modifications more than on that of any other man in the country.

Mr. Sellers's reputation as a mechanical engineer is coextensive with that profession. He is an honorary or active member of the chief engineering societies of Europe as well as this country, and indeed it would be quite superfluous for me to introduce him to any member of the American or English societies of mechanical or civil engineers, as he is well known to all of them personally and by reputation.

If you can secure Mr. Sellers's services in this matter, you will have a thoroughly reliable and competent guide.

Very truly yours,
HENRY MORTON,
President.

REPORT.

3301 BARING STREET, PHILADELPHIA, October 23, 1889.

MAJOR JNO. W. JOHNSTON, New York :

DEAR SIR,—The reports already submitted, as to the operation and results of the Lanston type-machine, examined by me in Washington, D. C., having served their purpose in enabling you and the limited number of persons interested to judge of the value of the invention, I now combine the arguments contained in both, and, as you request, extend the calculations of the prospective profit to accrue to the Lanston Co., and saving to the users of the machines, that one report may cover the whole ground.

Mr. Tolbert Lanston, of Washington, D. C., has now on exhibition in that city a machine for casting separate type of the usual commercial form, and at the same time setting them in justified lines ready for the press, the operation being controlled by strips of paper punched on another machine called the keyboard. This key-board is like a type-writer, and is operated in the same manner, and, being separate from the casting-machine, the operation of which it governs but does not impede, it may be located away from the heat of the casting-machine, and it requires, on the part of the operator, no knowledge of the mechanical detail or adjustment of the power-driven casting machinery.

The casting and setting machine is driven by belt from any source of power, at a regular speed, dependent on the size of the type being cast and the possible rapid cooling of the same, the highest speed being obtainable when casting the smallest type. The types produced by this machine differ in no essential respect from those in common use either in height or body dimensions, and may be "nicked" as those set by hand, if they are to be

sold after first use, as commercial type. It has been claimed by the inventor that they will meet with a ready sale, if distributed and sorted, or sold in the page as they stand. While recognizing this source of profit to the users of the machines, I do not take such sale into consideration in my estimate of the output of the machines and the cost of running them.

My investigation into the merits of the invention has extended, first, to a careful and thorough inspection of the experimental machine on exhibition. Its only apparent defects in type produced are those due to faulty work of the mould-makers who punched the face-moulds. All such defects are purely technical and easy of correction.

The key-board that punches the two strips of paper, which control the action of the casting machinery, works with precision, but is a crude production as compared to the perfected key-board to be used with the perfected machine for casting.

My second examination was of the working of the *perfected key-board*, now so far done as to permit use, and its operation is very satisfactory. In touch, it is lighter than that of any type-writer I have used or tried. It differs from the key-board of the experimental machine in many particulars, the main one being that it punches one strip of paper only, while the experimental machine requires two papers, fed each to separate parts of the machine, perfect result depending upon the proper registration of the two strips in the casting-machine. The great advantage of the one-paper system (to be used in the perfected machines) is the avoidance of errors from faulty registration and from the possible combination of the strips not belonging to one another.

My third examination was confined to the thorough understanding of the drawings now being made of the *perfected casting-machine*, which drawings have been so far finished as to permit a clear understanding of the operation of the machine, and are also so far executed in design as to make sure their completion by one skilled in such machinery in case of the death or incapacity of the inventor.

My fourth line of investigation has been conducted away from the experimental machine, in consultation with experts in

their several departments, as to the profitable perfection and use of the invention. I have carefully studied it in comparison with the work of good compositors, and at your request in comparison with the operation of some other patented machines also, aiming to supersede hand-work.

Before proceeding to the calculations of profit, I will explain the defects which you and experts have noted in the work of the experimental machine, and show why any further expenditure on a purely experimental machine would be unwise, the demonstration being technically sufficient.

My personal experience with type-casting machines extends over a period of fully forty years. Having access to leading type-foundries and to the type-setting-rooms of many publishing houses, I have been able to compare my own conclusions with the opinions of experts in their several lines. The experts who have examined the work of the machine critically, and to whom I have explained its principle and operation, confirm my opinion that all defects manifest in the output of the present machine indicate that they might be overcome in the experimental machine, and its product would be what is expected from the perfected machine.

I am in receipt of nine lines of matter cast for me on the experimental machine to show the defects in the alignment and the face of some type.

SAMPLE OF WORK DONE BY THE EXPERIMENTAL LANSTON TYPE-MACHINE.

Dear MR. SELLERS:—

I send you these lines of type specially cast for you as specimens. I hope that they may be satisfactory, and that they may aid you in the very thorough investigation as to our methods and results which you are now making.

Very Respectfully,

TOLBERT LANSTON.

*Washington, D. C.,
October 17th, 1889.*

Upon receipt of this sample, which was to take the place of matter I had brought with me from Washington, and which was cast while I was watching the machine in operation, but which

I had accidentally pied, I sent for another sample, showing the full fount of one hundred and eighty-nine distinct faces, leaving thirty-six keys unrepresented, which set the many widths of spaces, besides the keys required to control the justification of the lines.

SAMPLE OF FOUNT CAST ON LANSTON MACHINE.

A B C D E F G H I J K L M N O P Q R S T U V W
 X Y Z. A B C D E F G H I J K L M N O P Q R S T U
 v w x y z. a b c d e f g h i j k l m n o p q r s t u
 v w x y z. A B C D E F G H I J K L M N O P
 Q R S T U V W X Y Z. a b c d e f g h i j k l m
 n o p q r s t u v w x y z. . ; , - "m" [m] : ! ? (m) 'm'
 ! 1 2 3 4 5 6 7 8 9 0 \$ ½ ¼ ¾ ⅛ ⅜ ⅝ ⅞ @ lb
 Æ Œ & æ œ fi ff fl ffi Æ Œ & fi fl ffi ll
 £ ¤ % & ¢ ———— lb @ *****????!!!!£ %
 ooooo omomomomom nnnnn sssss smmsmsmsmsm vvvvv vmvm
 kkkkk kmkkmkkmkkm rrrrr rrrrrrrrrrrr ggggg gmgmgm
 MMMMMM LLLLLLLLLL OOOOOOOOOO
 HHHHHHHHHHHHHHHHHH HHHHHHHHHHHHHHHHHH

SAMPLE OF WORK AND WORD-SPACING.

When in the course of human events it becomes (*Normal*)
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes

The sample given above, showing the same line repeated with increasing width of word spaces, is to illustrate the capability of the machine in spacing, and by the repetition of the same line to show the persistence of the same faults in each individual letter, as well as in any want of proper alignment. The Lanston machine is provided with one mould for each letter; that mould is presented to the matrix that forms the body of the

type, each letter-mould being held to position by the *same fixed guide*. If the workman who sinks the die places the impression properly, it will for all time be correctly presented to its body matrix. The uniformity of the errors shows that they are faults of placement only, apart from defects in the form of the letter-face. I have tested many of the faulty types with the instruments of precision used in the type-foundry. The same test applied to the letters that are the most satisfactory shows such types to be correct in all required respects, while the faulty ones point to what is needed in the way of correction. As an example, the lower-case or small s* shows in all cases the lower left hand too heavy for the corresponding top of the letter. The type forming the s placed in the gauge used to test the correctness of the top surface of or face of the type, called the face-gauge, shows that the dark end is the highest, and thus by its prominence is made to give the deepest impression.

My examination of the types produced has not been confined to the examination of their width only, as compared to commercial type, but has extended to all the tests to which type-founders are obliged to submit their product, to keep up the standard of excellence that makes the product of their skill one of the marvels of mechanic art. So that in explanation of the defects observable by critics in all of the above, I will say that want of proper alignment or regularity in letter-spacing show errors in die-sinking all capable of correction by experts in making the moulds for type-founders. The style of face of the type and errors showing in comparative size of letters are all due to the want of care in the workmen who made the punches. The same methods, available to the type-founder, of copying the faces of existing founts of type can be used in making the moulds for this machine.

Mr. Lanston would have been warranted in perfecting the moulds used in the experimental machine but for the fact that all such work would have been useless, as the moulds for the experimental machine can not be used in the perfected machine,

* Type cast on Lanston machine set in combination with ordinary long primer.

the design of that machine being very different and more simple. The present demonstration of the principles involved is satisfactory to experts.

In *starting the cold machine* in my presence, one line only was lost from imperfectly filled bodies, the matrix having been too cold. Such loss in practice is avoided by casting a few lines of letters or quods to be remelted if imperfect before beginning the matter for the press.

Small bits of type-metal carried with the type into the loose galley fall out or can be removed when lifting each line from the machine galley to the printer's galley in making ready for the press. Small bits of metal have, it is said, been seen to adhere to the sides of some type. I noticed but one or two types so deformed. The excrescence, no larger than a pin's head, was removed with my knife; and the attendant of the machine, seeing such defects, can remove them. The fact of the types being separate permits the replacement of any defective type by a perfect one from a fount of perfect type by the workmen who corrects the errors found by the proof-reader. The justification of the lines cast by the machine is as perfect as the average justification by compositors.

The speed of the experimental machine is below that to be expected from the perfected machine, owing to errors in construction of the frame of the machine, want of space for the contained machinery, and want of room for the application of sufficient cooling blast, as well as other technical defects to be corrected in future machines.

The process of setting type by machines, either from founts of existing type or by casting such type either separately or in solid lines, depends upon two operations. The first, that of the key-board, requires skill and mental effort. The manipulation of the keys is at varying speeds, dependent on skill of the operator and on the clearness of the copy to be set up. When the key-board is attached to the casting-machine, the operation of the latter is hampered by the irregularities of the manual work of the operator. The casting-machine may also hamper the operation of the key-board, when the size of the type cast is to be considered as to the speed of cooling. With the two operations

combined in one machine, the key-board operator must have knowledge of the machine that casts, and be able to keep it in adjustment, or wait for the help of a skilled attendant. In separating the key-board from the casting-machine the brain-work part of the operation is taken away from a machine that does not call for such effort, and which will work better if run at a regular rate of speed. By such separation each machine can be placed to the best advantage and comfort of the operators. The professional work equivalent to the type-setting is relegated to the composing-room, away from the noise and heat of the purely mechanical operation of casting type. The Lanston key-board can be used in the composing-room of the printing-house or in the office of the railroad company or commercial house requiring much printed matter. It is simply a type-writer with an extended key-board to be operated by the same kind of talent, to which has been added a few hours' instruction in "justification."

The "justification" as affected by the Lanston machine is mechanical, the operator following the indications furnished by the machine itself.

Mr. Tolbert Lanston has struck the key-note to success in separating the brain-work of the compositor from the mechanical operation of casting type. He has by this separation made it possible for the compositor, in less than eight hours' work, to feed a machine for a full day's work of ten hours, the casting-machine working regularly and without any interruption under the attention of a comparatively unskilled workman. *The two machines, combined in result but separate in practice, can be run at less cost and greater profit than any method of furnishing matter for the printing-press that has come to my notice, as I shall presently show.*

Those who have read the description of the Lanston type-machine, as furnished by the inventor and his experts, may have noticed that he calls attention to the fact that the key-board performs its work independently of the size or kind of type the matter is to be set in. That, from the same band of paper, printed matter can be furnished in any size or face of type with which the casting-machines have been fitted. This is true, but may be misleading to the professional printer, and must be

accepted with reservation. The operator of the key-board must know in advance the number of "ems" required to each line, and the machine is set to the required length of line, measured by ems, regardless of the size of type to be used. With thirty ems to the line, the matter cast in pica, or twelve-point type, will be represented by a line five inches long, as six pica M's of type measure one inch "running ways," or in the length of the line. Nonpareil type, of six points, will, with the same number of ems, give a line two and a half inches long, and so in proportion for every size of type between the above sizes. If the key-board operator is notified of the combination of sizes in one page, he can arrange spaces to permit two lines of one size, or parts of lines, to be placed end to end, to make smaller types fill the page in union with larger ones. The operator of the key-board, having set the index to the required number of ems per line, has before him a scale upon which a hand points to the type set by his movements of the keys. When the line is full enough, and no word or syllable can be added safely, he has but to notice the figures indicated by the pointer on the justifying scale, and touching the so-numbered keys of justification, he gives to the strip of paper punched the power to control the perfect filling of that line of type.

In the type-casting machine the justifying holes in the paper enter in advance of the holes for type composing the line; thus the justifying devices of the machine are set to control the even enlargement of the word spaces to the perfection of the length of the line.

HEIGHT OF TYPE AND QUODS.*

The blank spaces filled by quods at the ends of short lines, or wherever space is required free from letters, are made up of em quods, not by the wide quods used in hand-set composition. Those em quods are supplied in rapid succession both in the work of the key-board and by the casting-machine, the spaces and other blank types or quods being as high as the body of the

* "Quod" (abbreviation of quadrate), a low square blank type used to indent the first line of a paragraph, and to fill in blank spaces.—*American Printer*.

letters. The height of the blank or "fat"* matter is admirably adapted for the use of such pages in stereotyping. The samples of printing furnished by Mr. Lanston representing poetry in short lines and much blank space, all produced directly from the standing type cast on his machine, show no signs of blacking from high quods. All such blank spaces can be "routed," or cut lower, after being locked in the form by the machines used to lower such spaces in stereotype work.

Without going any farther into the description of the machines given fully by the inventor and his experts in their several pamphlets, I will endeavor to show the value of the invention as compared to hand composition, and briefly compare its operation with that of the Linotype, which is a machine now extensively used, and which enables an operator working at a key-board attached to the machine to set lines of type of any required length; such lines, upon completion and perfect justification mechanically, are then cast as solid lines and dropped into a galley while the succeeding line is being set and justified; the comparison being for the purpose of showing what has been accomplished by mechanical help to compositors and what can be done.

The Linotype has a key-board of one hundred and seven separate keys arranged in four rows, and this number of keys is said to be sufficient to cover not only all required faces of type to be used, as from one fount, but also on some machines to meet the requirement of many logotypes, with faces set body-ways, such logotypes being much used in printing addresses for wrappers,—thus, *Wm. Tolbert Lanston*; the twelve months, expressed by three letters each, Jan., Feb., Mar., etc.; Mrs., Mr., Dr., box, etc.; to the extent perhaps of twenty keys are so employed.

The *Lanston key-board*, in comparison with the above, is separate from the casting-machine, and is very much like an ordinary type-writer with a bank of keys, in fifteen rows, each row having fifteen keys, making two hundred and twenty-five in all. Mr. Lanston has utilized one hundred and ninety-eight of the keys with what he thought useful characters, but the large num-

* Poetry, or other leaded matter.

ber of keys on the experimental machine, as shown on page 8, makes the use of "logotypes" very practical and convenient, such "word types" being confined to the words that can be placed on an "em" body, such as "to," "at," "no," "its," etc., besides all the logotypes found convenient on the Linotype, the latter being in smaller type than the fount in use.

SPEED.

The speed of the type-casting machine will be as great as, if not greater than, the ordinary type-casting machine running on the same size of type body. It should be greater, inasmuch as the number of face-moulds presented to the one body matrix favors cooling. The experimental machine has been run at the rate of one hundred and two types per minute in casting long primer, with its imperfect blast for cooling. As the largest letter body is the em, interspersed with many thinner bodies for letters calling for less space, the speed should be the same as that of other type-casting machines, so that an average of one hundred and thirty-five revolutions per minute will be a low estimate, in consideration of the great number of smaller sizes of type than long primer on newspaper work, one hundred and eighty being the speed per minute at which minion and smaller type can be cast.

SPEED OF THE KEY-BOARD OPERATION.

In my former report I named one hundred and eighty as the probable speed in key movements per minute, inasmuch as one hundred and eighty key motions on a type-writer result in thirty-six words per minute. I am now confirmed in the certainty of two hundred key movements per minute being more nearly the fair average. Assuming, however, one hundred and eighty-five as quite within bounds, we have eleven thousand one hundred per hour and eighty-eight thousand eight hundred in a day of eight hours.* All key movements, as well as all

*The perfected Lanston key-board is operated by electricity, and has the power to repeat the same letter or space continuously so long as any one key is held down, at a rate very much more rapid than can be with comfort accomplished by repeated strokes of the same key. This faculty of

revolutions of the type-casting machine, *do not produce type*. Some key strokes relate to justification, and some revolutions of the type-casting machine to the act of justification and to the movement of the line cast into the galley. It is needful to find the relation between available motions and those lost in the justifying process.

Compositors are paid for their work by the thousand ems, the number of ems to the line being computed by graduated scales which are laid off in "ems" of each size of type. In computing the cost of composition, the foreman counts the types in each line and finds the relation to the ems by application of his scale to the standing type in length of line. Since my first report was written I have tabulated a large number of pages and columns in many sizes of type, and find the average number of types per em to be 2.016, but as I, in my first report, assumed 2.2 types to the em, I will continue the use of that number. Pages run from forty to twenty ems per line, and I assume as the average thirty ems to the line. 30×2.2 give 66 types per line, and as three key motions and three revolutions of the type-casting machine are used in justifying each line, besides one to move the line into the galley, we have seventy key movements to each thirty ems of type cast and justified. From this we have by the simple rule of three the result of the eighty-eight thousand eight hundred key movements in a day of eight hours; for, as seventy is to thirty so is eighty-eight thousand eight hundred to thirty-eight thousand odd ems per day.

automatic repetition enables all "fat" matter to be filled in with surprising rapidity. Thus, if a line is to be cast blank, the key of the "em" quod is held down, and the index races to the end of the line without any effort on the part of the operator. In comparing the work of the key-board operator with that of the type-writer, the latter has no equivalent to this mechanical repetition in such work as dashes; thus, -----, which require a separate key movement to each one.

With this principle of the machine in view, the one hundred and eighty-five key movements per minute is a very low speed. I can operate a type-writer, using but one finger of each hand, making no error, two hundred and sixty key movements per minute.

SPEED OF CASTING.

The same computation applied to the casting-machine, on the assumption that it will make one hundred and thirty-five revolutions per minute and may be run with other machinery for ten hours to the day, $135 \times 60 = 8100$ per hour and 81,000 per day of ten hours. To get at the loss from justification we apply the same rule, and as seventy is to thirty so is eighty-one thousand to thirty-four thousand seven hundred and seventeen ems per day, so that in round numbers a key-board operator can do the work representing the setting up of thirty-eight thousand ems in eight hours, and the type-casting machine will cast thirty-five thousand ems in ten hours. The estimate of the speed of the casting-machine being based on actual knowledge, we can safely say that one key-board will more than feed one type-casting machine. This is a strong argument in favor of the separation of the two operations.

To enable the holders of *Lanston type-machine stock* to form some idea of its value, I will compare the operation of the machine with the cost of hand-set type. In the city of Philadelphia, compositors are paid at the rate of forty cents per thousand ems both on book and on newspaper work, the *Philadelphia Public Ledger* alone paying forty-five cents. A published statement of the wages earned by workmen in various trades gives for the city of New York forty cents per thousand ems for day-work, and fifty cents for night-work.

Compositors on book-work earn on an average two dollars per day of ten hours in setting and distributing five thousand ems, while good workmen on good takes may set eight thousand and earn three dollars and twenty cents.

On the assumption that by means of the key-board thirty-eight thousand ems may be set in eight hours as compared to five thousand by hand, and letting such operator earn two dollars with the chance of exceeding that sum by piece-work, we have thirty-eight thousand ems at two dollars, plus fifteen cents to cover the cost of paper and power,—two dollars and fifteen cents per day, or five and sixth-tenths cents per thousand ems. The assumed output of the casting-machine running ten hours

is thirty-five thousand ems, requiring the attention of a boy at seventy-five cents per day under the oversight of one three-dollar attendant to six or more machines; and, taking one dollar and ten cents as the cost of power repairs per day and loss on metal in remelting, we have for the total cost of setting thirty-five thousand ems,—

| | |
|---|---------|
| 35,000 ems at $5\frac{6}{10}$ cents for the key-board | \$1.96 |
| One-sixth machinest at \$3.00 | .50 |
| Boy | .75 |
| Loss on metal | .10 |
| Power | .50 |
| Repairs per day | .50 |
| <hr/> | |
| Total | \$4.31 |
| 35,000 ems set by hand at .40 | \$14.40 |
| 35,000 ems set by hand at .30 | \$10.50 |

At thirty cents the publisher saves twenty-five per-cent. over the usual cost, and the difference to cover all royalties that may be charged and showing as profit to the Lanston Co. is \$10.50 less \$4.31 = \$6.19 per day.

In the above estimate of cost, the loss only on metal used is given. All users of mechanical type-setting machines that require type-metal, casting lines of type, or even whole pages of matter, take advantage of the fact that the comparatively soft type-metal at low price, say five and a half to six cents per pound, gives better result at low heat than the harder high-priced metals used in making the best quality of commercial type. Much of the type in the market at low price is made of this kind of metal. Thirty-five thousand ems of long primer will weigh about one hundred and seventy-five pounds, and the cost of the metal for one day's work, as above estimated at five and a half cents, will be,—adding five per cent. for loss,—nine dollars and twenty cents,—as compared to the same amount of new type, which would cost seventy-one dollars and seventy-five cents at forty-six cents and twelve per cent. off. On book-work the deterioration of type is so slow as to be of no account in estimating cost. On newspaper work the loss is as great as twenty to twenty-five per cent. per annum, from the damage done in beating the paper for

the stereotype plate on to the type and the heating of the type to dry the wet paper.

The Lanston type-machine will commend itself to the work of newspaper printing, as it gives to each issue a new face at low price, and, so far as loss of metal is concerned in remelting, such loss will be as nothing to the deterioration of the type by the methods now used to duplicate the forms.

In answer to questions as to profitable use of one casting-machine only by small publishers, I would say that the united wages of the boy at seventy-five cents and one-sixth of a three-dollar machinist is one dollar and twenty-five cents, good pay for one competent to care for the machine. If the one dollar and twenty-five cents be on the basis of thirty-five thousand ems cast, piece-work on such basis would enable the attendant to earn at least one dollar and fifty cents per day, the pay of an average machinist. There is no work required in connection with the casting-machine that cannot be accomplished by an intelligent laboring man trained to this specialty.

It is said in the printed reports issued by companies owning type-setting devices that some large daily papers require thirty-five such machines to do their work. The Lanston machine will do twice as much work as is claimed for each of such machines. This will enable the holders of Lanston stock to judge of its value.

To obtain the results indicated, I have assumed good business methods both in the construction of the machines and in their presentation to the public.

The drawings are now so far completed that the new and perfected type-casting machine should be ready for estimates as to cost of construction by the middle of December. If such drawings are made in accordance with shop practice, and are thus ready for work, the perfected machine should be done in from four to six months after contract with the builder. The character of the machine is such that any first-class machine-shop could build it, but the moulds should be made by workman under the direction of the persons interested in the invention.

I have carefully examined the *patents* taken out in this country for the protection of the invention, covering process and product,

and find them broad and well expressed. The examination of the drawings shows many matters in process of design that can be secured by other patents which from the novelty of the invention will be valuable.

The foreign patents seem to have been taken out with due care to the requirements of each country. They represent a wide field of operation promising profit.

In conclusion, I must say that I have seldom had so pleasing a task in investigating the value of an invention as in the present case. The novelty of the contrivances are attractive and based on sound mechanical principles. I have been greatly aided in the study of the machines and their principles by the inventor and those employed by him.

The invention is one that calls for a more enlarged capitalization than the present organized company represents. The machines, costing from one thousand to fifteen hundred dollars each, are capable of earning each their own cost per annum on the base of a saving of over twenty-five per cent. over hand work, without counting the profits for type sold.

Hoping that my investigation will satisfy you and those most interested, I am,

Very respectfully,

COLEMAN SELLERS, E.D.

REPORT ON LEGAL CONDITION OF THE LANSTON TYPE-MACHINE COMPANY.
BY WM. W. GORDON.

RICHMOND, VA., October 9, 1889.

MAJOR JNO. W. JOHNSTON :

DEAR SIR,—At your request I went to Washington for the purpose of examining into the legal condition of the Lanston Type-Machine Company, and beg leave, after a full examination of the records of the company, to report as follows,—viz :

1. The charter of the company was duly taken out under the laws of the State of West Virginia, the statutory requirements in procuring the same having been fully complied with.

2. The organization of the company is entirely regular, all proper proceedings for the perfecting thereof having been taken. It may be proper to say that the records upon their face disclosed an irregularity in the organization which appeared to me to be serious and of which you were at once apprised by me. I immediately called this to the attention of the officers of the company and its counsel, and, upon making a thorough examination, found that the apparent difficulty arose out of an imperfect entry of the real facts in the record book of the company. Before leaving Washington, I recommended the proper correction to be made, so that the record should correspond with the real facts as they appeared from the material in possession of the company, and this has since been done.

3. The proceedings of the stockholders and directors, both as to the issue of stock and the detailed management and expenditures of the company appear to have been taken with unusual caution and minuteness for the protection of those interested.

4. The patents issued for Mr. Lanston's inventions and improvements have all been issued either directly to the company as his assignee, or have been assigned by him to the company when issued to him. Mr. Lanston has also made a contract for the further assignment by him to the company of all perfections and improvements made or to be made by him, during a period

of three years, upon his invention. I think this contract secures all that may be reasonably asked or had in reference to improvements not yet made. This contract has been somewhat modified from the original draft proposed, in order to meet my views as to securing the fullest protection to the company.

Let me add that I have very little knowledge of the technicalities peculiar to Patent law, but I have had full and free conference with Mr. Melville Church, the counsel who had charge of this department of the business, and who, I am satisfied, understands it thoroughly. Mr. Church has at my request written you the enclosed letter giving you information upon that subject much more intelligibly than I could do.

Yours truly,

WM. W. GORDON.

REPORT ON THE LANSTON PATENTS.
BY CHURCH & CHURCH.

WASHINGTON, D. C., October 4, 1889.

MAJOR J. W. JOHNSTON,
Birmingham, Alabama :

DEAR SIR,—You have asked us for a statement in regard to the inventions and patents under which the Lanston Type-Machine Company is operating, and also in regard to the nature of the interest which said company has in such inventions and patents, and we beg leave to submit the following :

The inventions under which the company is operating are those of Mr. Tolbert Lanston, of this city, and in order that you may form some notion of their character, it will perhaps be well to premise with a statement as to the manner in which the process of hand-composition, as practised by the ordinary printer, is carried on. The printer, in composing, holds what is called a “stick,” or receptacle for type, in one hand, while with the other hand he picks up successively, from the type cases, the type which he requires, assembling them one after another in the stick.

It rarely ever happens that a series of words, uniformly and regularly spaced, exactly fill a line, or, in other words, fill the width of the stick, the rule being that a space of greater or less length is left at the end of the line which must be filled up in what is called the process of justification, which process consists, usually, in taking out some of the space-types between words and inserting in their places other space-types of greater or narrower width, or simply inserting additional space-types without removing any of those already in the line.

Since it is apparent that in every case the unoccupied space at the end of the line must bear a certain relation to the part of the line filled with the characters, or, in other words, represent a small percentage of the combined width of such characters, it follows that if there be added to the normal width of the body of each of the assembled types a percentage of increase corresponding to the percentage which said unoccupied space represents of the occupied space, the line composed of types so formed will be rendered self-justifying. To illustrate this, suppose the unoccupied space in a line required to be taken up by justification represented one per cent. of the part of the line filled by type of the normal width, the addition of one per cent. to the normal width of the body of each of such assembled type would cause this space to be taken up or absorbed, one per cent. of addition to the width of each section or part of the assembled type being equal to one per cent. of the whole aggregated width of said type.

Instead of thus adding to each type a certain percentage of the width thereof, the same result can be accomplished either by apportioning the unoccupied space in the line equally among all the types therein, and thus adding to all the types a certain uniform and definite increase in width,—say a one-five-hundredth of an inch to each,—or by apportioning the unoccupied space in the line equally among the space-types between words contained therein, by adding an equal amount of increase to the normal width of each of such space's value.

Now, the radical improvement in this art invented by Mr. Lanston consisted, broadly stated, in first ascertaining the length of the proposed line of matter; then, ascertaining the space

which would be required to be filled by justification, if types of normal or standard size were employed ; and finally, forming a series of types for the line, the bodies of which, or of some of which, are varied as to width from the normal an amount sufficient in the aggregate to absorb the said space required to be filled by justification.

You will observe that this invention of Mr. Lanston's is basic and fundamental in its nature. It covers the method or manner of doing the thing, and is not limited to any particular means for doing it. The method may be practised by hand or by machinery, and if by machinery it is entirely immaterial what the particular construction of the machine may be, for the invention concerns not the structure or particular mechanism of the machine, but the several acts or steps of the new method practised by means of it.

Four patents have been granted covering the fundamental principles of the invention,—viz, Nos. 364,521, 364,522, 364,523, 364,524, all dated June 7, 1887.

The first of these patents, No. 364,521, covers, generically, the variation of the bodies of the *desired number* of types forming a line, and, specifically, the variation of the bodies of *all* the types forming a line ; the second one, No. 364,522, covers the variation of the bodies of all the types forming a line, by adding to each type a percentage of increase corresponding to the percentage which the unoccupied space represents of the occupied space ; the third, No. 364,523, covers the variation of the bodies of the space-types between words only ; while the fourth, No. 364,524, covers a form of type produced by the practice of the generic method, or, in other words, the product of the method.

The first machine which the company built for practising Mr. Lanston's method was designed to form the type from cold metal,—i.e., lead strips,—and while it completely demonstrated the practicability of carrying out Mr. Lanston's method by machinery,—making good type from which good print was produced,—was soon displaced by a second and much better machine which made or moulded type from hot metal.

The first machine was adequately covered by patent No. 364,525, dated June 7, 1887, and the second one, which is now on

exhibition, forms the subject-matter of several new applications for patents now being prepared by us.

The second machine you have seen in operation. It makes, and sets up into forms, justified lines of type which require no hand manipulation whatever to prepare them for printing or stereotyping.

We would add that, with a view to bringing the machinery for carrying out Mr. Lanston's method to a still greater degree of perfection, a third machine has been designed and will soon be in process of construction.

This last machine will make type from hot metal, and the experience gained in building its predecessor will, we are satisfied, enable the constructors of it to reduce greatly the number of parts, as well as increase the speed and general efficiency of the machine.

The entire property in all of these inventions and improvements of Mr. Lanston is vested in the company, and the company also has a contract with Mr. Lanston, wherein he obligates himself to endeavor to still further improve upon, develop, and perfect the system and assign to the company any improvements he may make.

Besides the protection secured in this country, patents for the Lanston inventions have been procured in Italy, Austro-Hungary, Great Britain, Canada, Belgium, Germany, and France, and assigned to the company.

This will give you a general idea of the strength of the company's position with respect to inventions and patents. We have not deemed it profitable to enter into a description of the machines employed in carrying out Mr. Lanston's methods, but should you desire any information on this or any other point, we shall be pleased to give it to you.

Yours truly,
CHURCH & CHURCH.



THE LANSTON TYPE-MACHINE.

OFFICE: ROOM 106 ATLANTIC BUILDING.

(The Lanston Type-Machine Print:—*Second Machine.*)

WASHINGTON, D. C.,

Sept. 1st, 1889.

ORGANIZATION.

THE LANSTON TYPE-MACHINE COMPANY.

Incorporated under the laws of the State of West Virginia.

OFFICERS:—

President, M. J. WINE.

Vice President, I. L. JOHNSON.

Secretary, B. F. COLE.

Treasurer, W. H. HOEKE.

DIRECTORS.

Benjamin Butterworth.

W. H. Hoeke.

B. F. Cole.

I. L. Johnson.

Mellville Church.

Tolbert Lanston.

J. Maury Dove.

John C. Parker.

W. Clarence Davall.

C. D. Sigsbee.

George Gibson.

L. D. Wine.

M. J. WINE.

CAPITAL STOCK.

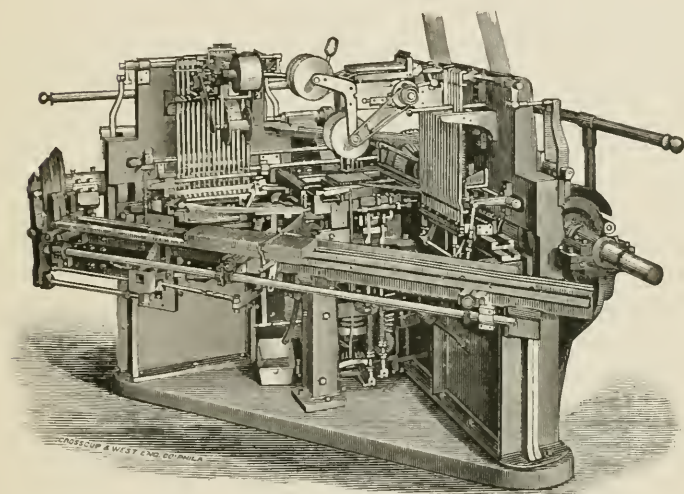
| | |
|----------------------|--------------|
| Shares, | 50,000. |
| Par value, | \$20. |
| Capital, | \$1,000,000. |

THE LANSTON TYPE-MACHINE.

A MACHINE THAT READS COPY AND AUTOMATICALLY RE-WRITES IT IN TYPE METAL.

IT IS CAPABLE OF DOING ALL THAT THE COMPOSITOR DOES AND ADMITS OF THE SAME FACILITIES FOR THE CORRECTION OF ERRORS, INTERPOLATIONS, SHIFTING OF MATTER, &c., &c., THAT ARE FOUND IN HAND SET-TYPE.

ALL THE CONDITIONS OF THE ART AS NOW PRACTISED MECHANICALLY REPRODUCED.



TO THE PUBLIC:

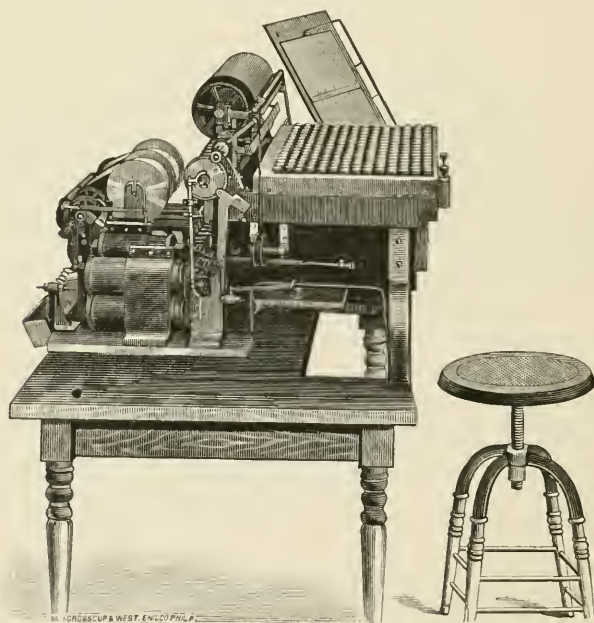
The above cut represents a machine embodying the inventions of Mr. Tolbert Lanston of this city, embracing important improvements in the art of printing.

By means of the devices invented by him the functions of the type-caster and the compositor are combined in a single mechanical process, the type-metal being transferred

from the crucible to the galley in the form of composed type ready for the press. The only manual part of the work is the manipulation of a key-board, operated independently as to time and place from the type-machine proper, the movements of the latter being entirely automatic.

This key-board contains a separate key for every character and space type contained in a complete font. They are two hundred and twenty-five in number in the machine now in use.

The depression of any key punches a round hole simultaneously in each of two paper ribbons. When the last syllable which can be put in any line has been recorded by these holes in the paper ribbons, the extent to which the spaces



of that line must be varied (by being made either smaller or larger) to justify the line is indicated by a scale, and a record of the degree of variance is made by means of holes punched in one of the paper ribbons only.

Both the rolls of paper having been filled with such holes punched at definite close intervals along their lengths, are next transferred to the type-machine proper. It is evident that as the paper ribbons are placed in the type-machine just as they come from the key-board, the holes enter the type-machine in the inverse order to that in which they were made, and consequently the justifying holes will enter the machine immediately before the line to which they apply, and by their presence devices are first put in operation which, while permitting the character types to be formed of proper normal body width, automatically alter the width of the space type in the line in the amount previously read on the scale at the key-board as being necessary to secure the justification of that particular line.

OPERATION OF JUSTIFIER ILLUSTRATED.

When in the course of human events it becomes (*normal*)
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes
 When in the course of human events it becomes
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 When in the course of human events it becomes
 When in the course of human events it becomes

The automatic continuance of these processes results in casting the types composing the line in the inverse order of their arrangement therein, and in their being placed in the galley *accurately justified*, ready to be arranged in the form on the imposing stone.

As a general conclusion it can be said that these inventions automatically make and set type at a rate daily which will supplant the labor, in its present form, of the type-caster, of those engaged in the hand finishing of type at the foundries,

and of five compositors, a total of eight persons. To do this requires the services, on an average, of one and one-third persons to each type-machine and key-board.

The commercial advantages of this immense saving of labor are apparent, and the supplemental advantages may be learned from the following statement of—

WHAT THE LANSTON MACHINES WILL BE FOUND TO DO.

- (1) To select the character with absolute certainty.
- (2) To form each type according to its proper relative size.
- (3) To vary some or all of the type bodies so that when the last character in the line shall have been made the line will be accurately justified;
- (4) To use with equal facility all the characters of as full a font of type as can be found in any printing office, including special characters to almost any number desired.
- (5) To make and set different fonts of type (*e. g.*, long primer, bourgeois, brevier, &c.) upon a single machine with but slight mechanical changes.
- (6) To form type of correct bodies and without burrs, and of good faces, that stand as squarely on their feet as the best foundry type.
- (7) To set the type, consecutively as made, in lines in the galley.
- (8) To make forms of type subject to all the conditions of hand-set type in making corrections or changes in proof.
- (9) To make and set type at a fixed and uniform rate of speed—not subject to human endurance, infirmities or necessities.
- (10) The type so made, after their single use, to possess a commercial value in excess of the cost of their production.
- (11) The paper ribbons, after being used, can be labelled and stored for future use in reprints, in lieu of stereotype plates, occupying but small space and being of little cost.
- (12) The type-machines being located at commercial centers, key-boards may be distributed among outlying towns, for use in country newspaper offices and by individuals, the paper ribbons produced by them sent to the machines, and stereotype plates or printed sheets returned. It will be seen that coun-

try editors, while thus maintaining the entire control of the originality of their matter, will need no other printing outfit than a key-board.

(13) Authors, newspaper correspondents, &c., by using the key-board instead of the ordinary type-writer, will practically become their own compositors.

(14) Within certain broad limitations as to sizes of type, and the use of straight lines only, these machines may be used in job or display work.

(15) Algebraic signs, geometrical, musical, astronomical or other technical characters, Greek alphabets, &c., &c., can be placed in the die case and used at will.

(16) The use of these machines involves no departure from the present every-day practices of printing offices in the handling of composed type. All the furniture and equipment remain in use.

(17) Any office adopting these machines would be able to dispose of their old type for recasting in the machines.

(18) Indicators can be placed on the machines to count every type cast and set.

(19) The investment necessary to secure the introduction of the machines would about equal the outlay for type under the present plan; but a new dress for every issue follows the use of the machines, and the immense loss from the wear of type is avoided.

(20) The floor space covered by the machines would be but a small part of that used by compositors, and the saving from this source, together with gas, &c., would be a considerable item.

(21) The punched ribbons may be used to reproduce the characters in type of any size, or of different sizes, at different times and places.

(22) The operator of the key-board—the compositor—is removed from the heat and noise of the machinery, and being more comfortably and quietly situated will make less errors than he otherwise would.

(23) The number of compositors employed in this country is somewhere between 80,000 and 100,000. To introduce 1,000 machines would displace 1 in 20, or nearly that. It may be

assumed that the general introduction of machines of this character will multiply the amount of printing indefinitely because of their cheapening effect.

(24) It may be expected, in time, that the key-board would enter into general use in public offices, corporations, mercantile houses, manufactories, &c., as their use in private hands will so reduce the cost of printing as to include in the volume of work done many things now omitted because of that cost. The present immense use of devices for producing manifold copies is indicative of a want in this direction. This distribution of key-boards would in itself be the source of a large direct revenue, besides the greater one arising from their being tributary to the type-machines.

The construction of the LANSTON MACHINES has progressed to the point of successful practical demonstration, and public attention is invited to them in the confident belief that an impartial investigation will convince all of their *great value as labor-saving devices*.

DISTRICT OF COLUMBIA, ss :
County of Washington,

Personally appeared before me, a Notary Public in and for the county and District aforesaid, Arthur W. Cathcart, who being duly sworn says that he is a machinist and in the employ of the LANSTON TYPE-MACHINE COMPANY, and in charge of its type-casting and setting machines; that all of the types from which the foregoing announcement "To the Public," was printed, were automatically cast and set in the galley in justified lines, by the LANSTON MACHINE, under his immediate control and supervision, excepting only the correction of typographic errors, few in number, and the exchange of good type for defective casts, not to exceed forty in the entire article.

A. W. CATHCART.

Sworn to and subscribed before me this twenty-second day of August, 1889.

FRANK S. ATWELL,
Notary Public.

Washington, D. C., August 23, 1889.

This is to certify that we have this day witnessed and tested by *actual count* the speed of the LANSTON TYPE-MACHINE, and found it to cast and set into justified lines *one hundred and two (102) type a minute*. We have no interest in this machine, and this is the first occasion some of us have ever heard of it. It seems destined to *create a revolution in the business of type-setting and printing*.

M. F. MORRIS.

WILLIAM B. GURLEY.

I certify that I witnessed the foregoing test and concur in the statement made in the certificate.

NOBLE D. LARNER.

GIBSON BROTHERS,
 PRINTERS AND BOOKBINDERS,
 1238 PENNSYLVANIA AVENUE,
 COR. 13TH STREET.

Washington, D. C., Aug. 24, 1889.

TO THE LANSTON TYPE-MACHINE COMPANY.

Gentlemen:—

Several years ago, I learned that Mr. Tolbert Lanston, with whom I have been acquainted for more than twenty years, was engaged in the invention of a machine which he claimed would automatically cast, set, and justify type. During the progress of the work on his immense and wonderful undertaking, when at times unexpected difficulties and delays were encountered, causing more or less despondency on the part of not a few of the stockholders, never for a single moment did my faith waver; and now that he has successfully completed a machine which accomplishes all that he claimed it would do, the only regret I have is that the condition of my finances did not permit me to show my faith in a more substantial manner.

I am a stockholder and otherwise interested in the inventions of Mr. Lanston relating to the art of printing, and have repeatedly witnessed the operations of the machine, examined samples of its type and its work, and have frequently executed printing from its products with satisfactory results.

I have been engaged at the printing business as compositor, pressman, or manager for a third of a century, and as a practical printer desire to say I have no doubt that when the machine is simplified as intended, the matrices perfected, and the metal manipulated by an expert, it will do all that is claimed for it in the twenty-four paragraphs as set forth by the company, and the name of Tolbert Lanston will be placed alongside of those of the greatest inventors the world has ever known.

Respectfully yours,

GEO. GIBSON.

The Daily and Weekly Patriot.

HARRISBURG, PA.

Sept., 4, 1889.

To the LANSTON TYPE-MACHINE COMPANY.

Gentlemen:—

I learn with pleasure that arrangements are being perfected for the manufacture and sale of the LANSTON type-casting and composing machine. Having seen the machine in operation at various stages of its development and watched its growth to a state of perfection, I can say that I am thoroughly convinced of its practicability and of its easy adaptation to the purposes for which it is intended. So profoundly am I impressed with its superiority over other machines that either compose type or cast lines of type, that I have ordered it for use in this office and shall expect the company to give me the very first machine it turns out for the market.

I am, Resp'y yours,

B. F. MEYERS,

Pres't. Patriot Publishing Company.

LYNCHBURG, VA.,

Sept. 16th, 1889.

I have seen the LANSTON TYPE-MACHINE operate a number of times, and am satisfied of its great utility. It does its work thoroughly well and with a rapidity equal to that of several compositors. Unless some difficulty should be developed which I cannot foresee, I believe it is destined to great success, the field for such an invention being practically unlimited.

ALEX. McDONALD,

Ed. Virginian.

JUDD & DETWEILER,
 PRINTERS AND PUBLISHERS,
 420 Eleventh Street N. W.,

Washington, D. C., August 21, 1889.

TO THE LANSTON TYPE-MACHINE COMPANY.

Gentlemen:—

In answer to frequent inquiries in regard to the LANSTON type-casting and composing machine, we would state that we have watched with keen interest the progress of the machine from its incipency up to the present time, and have sufficiently familiarized ourselves with its methods and the results achieved to state that we are not only surprised at its wonderful mechanism, but at the many apparently insurmountable difficulties that seemed to us to be impossible to overcome. It has reached a stage that it is safe to say that its practicability is no longer in doubt.

We have taken the type from the galley as cast and set by the machine, put them in the chase and to press, and worked from them with very little more care than from ordinary type.

The imperfections at present consist mainly in the imperfect matrices, which, of course, can be easily remedied; we deem it only a question of time to bring all of its parts to perfection, when the "LANSTON TYPE-MACHINE" will rank side by side with the greatest mechanical devices of the age, and when the art of type-setting will be reduced to one-half its present cost and when much of the weary midnight labor now in vogue will be dispensed with.

Respectfully yours,

JUDD & DETWEILER.

[Extract from the expert report of ALBERT W. STAHL, M. E., graduate of the *Sterens Institute of Technology*, Hoboken N. J., and of the *U. S. Naval Academy*, where he graduated at the head of the class of Cadet Engineers. Also Professor of *Mechanical Engineering*, *Purdue University, Indiana*, for thirteen years an officer of the *Engineer Corps of the U. S. N.*]

"The whole conception is remarkably ingenious, and the actual machine carries out successfully the required operations. The method of handling the type-metal substantially agrees with the method employed in ordinary type-founding.

"To ascertain the accuracy of the product in point of size, I measured with a micrometer the widths of eighty-eight types selected at random from type made in my presence by the machine and from an unused font of ordinary foundry type of good quality. All the types representing each letter were found to vary slightly among themselves, the error being about the same in the two kinds of type, and too small to be practically appreciable in either kind.

"The machine in my presence was producing justified lines of type at the rate of ninety (90) types per minute, and it is my opinion that a considerably higher speed can be successfully maintained with the more massive and rigid machines hereafter to be constructed. The justified lines of type placed in the galley in my presence were all of the same length, as far as could be judged by the eye and by the touch, and required no adjustment of any kind preparatory to being locked in the form."

[Extract from the expert report of WM. HECKERT, M. E., of New York City.]

"I have found in it one of those interesting cases where the human intellect is so blended and connected with fine mechanism that it requires an acute observer to see where one ends and the other begins.

"The inventor seems to have fully comprehended the requirements and subdivisions which insure the greatest variety, economy, and rapidity of work.

"Such results from a machine representing the inventor's first efforts entitle him to the highest commendation. No previous invention of corresponding magnitude and surrounded with as many difficulties has attained a higher degree of perfection in its infancy, and, as with other inventions, we may expect that further developments, simplifications, and increased efficiency will follow as the results of progressive, judicious management, opening a new era in the art of printing, and realizing the projector's fullest anticipations."

THE BELLS.

I.

Hear the sledges with the bells—
 Silver bells—
 What a world of merriment their melody foretells!
 How they tinkle, tinkle, tinkle,
 In the icy air of night
 While the stars that oversprinkle
 All the heavens, seem to twinkle
 With a crystalline delight—
 Keeping time, time, time,
 In a sort of Runic rhyme,
 To the tintinnabulation that so musically swells
 From the bells, bells, bells, bells,
 Bells, bells, bells—
 From the jingling and the tinkling of the bells.

II.

Hear the mellow wedding bells—
 Golden bells!
 What a world of happiness their harmony foretells!
 Through the balmy air of night
 How they ring out their delight!
 From the molten-golden notes,
 And all in tune,
 What a liquid ditty floats
 To the turtle that listens, while she gloats
 On the moon
 Oh, from out the sounding cells,
 What a gush of euphony voluminously wells!
 How it swells!
 How it dwells
 On the Future! how it tells
 Of the rapture that impels
 To the swinging and the ringing
 Of the bells, bells, bells,
 Of the bells, bells, bells, bells,
 Bells, bells, bells—
 To the rhyming and the chiming of the bells.

THE PETER-BIRD.

When summer's birds are bringing
 Their clear concerted singing,
 Singing gladder, gladder, gladder in their glees;
 When finches and the thrushes
 Make vocal all the bushes,
 And the lark his note of morning welcome frees—
 I hear no meter sweeter
 Than "Peter-Peter-Peter,"
 That the Peter-bird is singing in my trees.

How good to lie and listen,
 Where brooks in summer glisten,
 As they ripple, ripple, ripple to the seas;
 Where faintly in the pebbles
 They play their pretty trebles
 In the plaintive, sad and tender minor keys;
 But they can play no meter
 Like "Peter-Peter-Peter,"
 That the Peter-bird is singing in my trees.

When softly at the nooning
 I hear the clover crooning,
 Of its nectar, nectar, nectar, and the bees;
 When corn a-field is drying,
 And fading blades are flying
 With a floating pennon-rustle in the breeze,
 Oh sweet it is, but sweeter
 Is "Peter-Peter-Peter,"
 That the Peter-bird is singing in my trees.

When summer's joy is over
 And bees have robbed the clover,
 Leaving odor, only odor, to appease;
 When red autumnal juices
 Make music in their sluices
 As the fruity currents gurgle from their lees;
 The wine-tide sings not sweeter
 Than "Peter-Peter-Peter,"
 That the Peter-bird is singing in my trees.

Henry Thompson Stanton.

